

# ND-SMAC

## North Dakota - State Mapping Advisory Committee

Elroy Kadrmas: 701-328-8003; 600 E. Boulevard Avenue, Bismarck, ND 58505 -0840  
Lorraine Manz: 701-328-8005

### SMAC ANNUAL MEETING

September 10, 2008, 10:00 a.m. – 12:00 p.m.

DMR Conference Room, Abaco Building, 1016 E. Calgary Avenue, Bismarck, ND 58503

#### In attendance:

Bruce Beechie	ND Public Service Commission
Girish Budhwar	ND Department of Public Instruction
Keith Johnson	Midwest Testing Laboratory, Inc.
Steve Kranich	ND Geological Survey (non-voting)
Lorraine Manz	ND Geological Survey (non-voting)
Aaron Norby	Kadrmas, Lee & Jackson
Todd Norton	Advanced Engineering and Environmental Services, Inc.
Corinne Walter	US Bureau of Land Management

#### Not in attendance:

Dr. Allan Ashworth	ND State University
Rod Bassler	ND State Water Commission
Brian Bieber	ND Department of Transportation
Chris Dirk	ND Parks and Recreation Department
Levi Erdmann	ND Land Department
Ann Fritz	ND Department of Health
Brian Hosek	ND Game & Fish Department
Elroy Kadrmas	ND Geological Survey (non-voting)
Chris Laveau	US Geological Survey
Dr. Rich Lefever	University of North Dakota
Ron Luethe	Natural Resources Conservation Service
Bob Nutsch	ND Information Technology Department
Tim Penfield	Houston Engineering, Inc.
Jeff Quast	ND Department of Commerce
Larry Ruebel	ND Division of Emergency Management
Brad Schneider	Braun Intertec Corporation
Rachael Seifert	ND Department of Agriculture
Dr. John Webster	Minot State University

## MINUTES

### STATEMAP

Lorraine Manz (LM) apologized for the absence of SMAC co-chair Elroy Kadrmas and announced that she would be conducting the meeting on his behalf. Opening remarks included a brief discussion of the committee's function and the purpose of the meeting (requested by Bruce Beechie), which was followed by a short presentation on the proposed STATEMAP projects for FY0910.

Current mapping areas (Valley City and the Fargo/West Fargo metropolitan area) are scheduled for completion in 2009. Two new mapping priorities will be proposed for the FY0910 funding cycle, contingent upon the committee's approval. The first is a four-quadrangle coverage encompassing the city of Rugby in north-central North Dakota. Rugby is a regional agricultural center and the planned location for a 71-turbine wind farm. Most of the urban district lies along the northern edge of the Tunbridge and Rugby 24k sheets, with a small area extending into the adjacent Leverich and Rugby NW quadrangles. About three miles to the north the old municipal landfill borders part of the site area of the proposed wind farm. Only two of the four quadrangles, Tunbridge and Rugby or Leverich and Rugby NW will be mapped in FY0910, and the committee was asked to comment on how they should be prioritized. Girish Budhwar suggested that Tunbridge and Rugby should be mapped first since this would be more in keeping with the SMAC mandate. Aaron Norby agreed and the other members of the committee concurred. The second project proposes a return to the Grand Forks area to map the Thompson and Bygland (North Dakota part only) quadrangles in anticipation of the continued southward expansion of the city. There were no objections or comments.

Bruce Beechie wanted to know to what vertical depth surface mapping is conducted. LM replied that typically it was not more than 10-20 feet and therefore, particularly in the glaciated areas of the state, not necessarily to bedrock. She added, however, that future STATEMAP deliverables would likely include one or more cross-sections that will depict subsurface geology to a depth of several hundred feet.

STATEMAP-funded geologic maps already published can be downloaded at:  
<https://www.dmr.nd.gov/ndgs/surfacegeo/surfacemaps.asp>

### NON-STATEMAP

The STATEMAP discussion was followed by a brief outline of other ongoing mapping projects at the North Dakota Geological Survey.

#### **Deep Geothermal:**

Mapping of the state's deep geothermal resources continues. A set of maps based on the 100k Dickinson sheet, depicting temperatures of four major geothermal aquifers (Dakota [K] and Madison [M] Groups, and Duperow [D] and Red River [O] Formations.) are scheduled to be completed by the year's end.

A collaborative project with UND, Encore Acquisitions, Inc., Ormat, and West Plains Electric Cooperative to investigate the feasibility of adapting organic Rankine cycle (ORC) technology to generate electricity using the low-to-intermediate temperature (90 °C to 150 °C) geothermal waters that are co-produced with oil and gas was abandoned when it was denied funding by the DOE. However, interest in a project of this kind continues to grow and several companies, including Ormat, UTC Power, Continental Resources, and Canadian-based Boreal Power Systems have approached Will Gosnold at UND to discuss the possibility of developing a small geothermal power plant somewhere in the Williston Basin. The Cedar Hills oil field in southwestern North Dakota and an area adjacent to the Canadian border in the central part of the state are potential candidates for its location. In its role as a supporting agency the NDGS is currently engaged in generating geothermal maps for the Cedar Hills field (and eventually the 100k Bowman sheet) and assisting with the identification of a suitable location for a demonstration study.

**Geochemical study**

Statewide maps showing the distribution of arsenic and selenium in the top five feet of the ground surface are scheduled for completion on December 31, 2008.

**Surface Geology**

The NDGS has published 136 non-STATEMAP-funded surface geologic maps (100k Killdeer sheet and 135 24k sheets). Two more 100K maps (Cavalier and Grafton) and seven 24k maps that will complete a nine-map set of the Bismarck/Mandan area are in the queue for publication.

Surface geologic maps (1:48,000-scale) for five metro areas (Bismarck/Mandan, Devils Lake, Dickinson, Jamestown, and Minot) have been published. Similar maps are planned for Fargo/West Fargo, Grand Forks, Valley City and Williston.

For more information go to: [https://www.dmr.nd.gov/ndgs/Publication\\_List/geoinvest.asp](https://www.dmr.nd.gov/ndgs/Publication_List/geoinvest.asp)

**Lignite Reserves**

Of the nineteen 100k sheets depicting Lignite Reserves, fifteen have now been published. The remaining four are in press.

On the 24k scale, 123 maps have been published. A further 350 maps are under consideration.

Published maps are available for download at: <https://www.dmr.nd.gov/ndgs/Coalmaps/coalmaps.asp>

**Landslides**

No further progress. More maps may be published when the Lignite Reserves series is complete.

**Uranium**

Work on mapping North Dakota's uranium resources continues but there have been no new publications this year.

For more information and to download published quadrangles go to:

<https://www.dmr.nd.gov/ndgs/uraniummaps/uraniummaps.asp>

**Volcanic Ash**

No further progress.

Published quadrangles can be downloaded at: <https://www.dmr.nd.gov/ndgs/Volcanic/volcanic.asp>

**Erionite**

The NDGS has no plans to issue any publications at this time. All data collected by the NDGS on this potentially carcinogenic mineral have been forwarded to the North Dakota Department of Health.

**Subsurface Geology**

Subsurface geology maps are published under the Geologic Investigations Series. Not all are available for download. For more information go to: [https://www.dmr.nd.gov/ndgs/Publication\\_List/geoinvest.asp](https://www.dmr.nd.gov/ndgs/Publication_List/geoinvest.asp)

- **Shallow Gas field screening**

Twelve 1:150,000-scale county maps depicting the results of shallow gas field screening analyses have been published. Five more are in progress. Two maps have also been published on the 100k scale, based on the Bottineau and Mohall sheets). For more information and to download published maps go to <https://www.dmr.nd.gov/ndgs/shallowgas/sgasrecent.asp>

- **Bakken Formation**

Several map sets depicting the structure, lithology, oil-generating potential, and geochemistry of the Bakken Formation have been published this year. GI 45 consists of a series of six maps/posters that describe the major lithofacies of the middle member, the main focus of the current Bakken play. Isopachs and structure maps of the Bakken Formation are available as GI 59, and geochemistry as GI 63. GI 61 is a map of time-temperature index (a measure of oil-producing potential) of the Bakken Formation.

- **Three Forks Formation**

The Three Forks Formation is conformably overlain by the Bakken Formation and is also oil-bearing. An isopach (thickness map) of this formation has been published as GI 64.

## **NON-NDGS**

### **North Dakota Land Department Lease Sales**

The North Dakota Geological Survey continues to publish, with data from the North Dakota Land Department, the quarterly lease sales of state lands for oil and gas exploration.

### **National Agriculture Imagery Program (NAIP)**

2009 imagery (1 meter) will only be acquired for agricultural areas. Imagery for the entire would cost an additional \$115,000-\$120,000.

### **DEMS**

USGS 10-meter coverage for North Dakota should be finished by June 2009. Paperwork is close to completion.

Go to (<http://statgraph.cr.usgs.gov/viewer.htm>) for more information.

### **Road Center Study**

Department of Emergency Services has taken the lead. Budget request was submitted

### **GIS Users Conference:**

There was no conference in 2008. A conference for 2009, but someone other than the GISTC may take the lead

Respectfully submitted

Lorraine Manz  
SMAC Committee Co-Chair

State Mapping Advisory Committee (SMAC) 2007-2008 Membership

Co-Chairpersons: (non-voting)

Lorraine A. Manz  
Geologist  
North Dakota Geological Survey  
600 East Boulevard Avenue  
(mail address)  
1016 East Calgary Avenue  
(street address)  
Bismarck, ND 58505-0340  
(701) 328-8005  
[lmanz@nd.gov](mailto:lmanz@nd.gov)

Elroy L. Kadrmaz  
GIS Specialist  
North Dakota Geological Survey  
600 East Boulevard Avenue  
(mail address)  
1016 East Calgary Avenue  
(street address)  
Bismarck, ND 58505-0340  
(701) 328-8003  
[ekadrmaz@nd.gov](mailto:ekadrmaz@nd.gov)

Committee Members: (voting)

Dr. Allan Ashworth  
Department of Geosciences  
Stevens Hall  
North Dakota State University  
Fargo, ND 58105  
(701) 231-7919  
[Allan.Ashworth@ndsu.nodak.edu](mailto:Allan.Ashworth@ndsu.nodak.edu)

Ann M. K. Fritz  
Division of Water Quality  
North Dakota Department of Health  
1200 Missouri Avenue  
P.O. Box 5520  
Bismarck, ND 58506-5520  
(701) 328-5226  
[AFritz@nd.gov](mailto:AFritz@nd.gov)

Rod Bassler  
GIS Coordinator  
North Dakota State Water Commission  
900 East Boulevard Avenue  
Bismarck, ND 58505  
(701) 328-4998  
[rbassler@nd.gov](mailto:rbassler@nd.gov)

Brian Hosek  
North Dakota Game & Fish Department  
100 North Bismarck Expressway  
Bismarck, ND 58501-5095  
(701) 328-6369  
[bhosek@nd.gov](mailto:bhosek@nd.gov)

Dr. Bruce Beechie  
Environmental Scientist  
North Dakota Public Service Commission  
State Capitol Building  
600 East Boulevard Avenue, Dept. 408  
Bismarck, ND 58505-0480  
(701) 328-4104  
[bebeechie@nd.gov](mailto:bebeechie@nd.gov)

Keith Johnson  
PG, CPG  
Midwest Testing Laboratory Inc.  
4102 7<sup>th</sup> Ave N  
Fargo, ND 58108  
(701) 356-7611  
[keithj@midwesttestinglabs.com](mailto:keithj@midwesttestinglabs.com)

Brian Bieber  
GIS Coordinator  
North Dakota Department  
of Transportation  
608 East Boulevard Avenue  
Bismarck, ND 58505-0700  
(701) 328-2649  
[bbieber@nd.gov](mailto:bbieber@nd.gov)

Chris Laveau  
United States Geological Survey  
102 N. 4<sup>th</sup> St. Rm 322  
Grand Forks, ND  
(701) 775 7221 ext. 14  
[cldladeau@usgs.gov](mailto:cldladeau@usgs.gov)

Girish Budhwar  
North Dakota Department of Public Instruction  
600 East Boulevard Avenue, Dept. 201  
(701) 328-4886  
[gbudhwar@nd.gov](mailto:gbudhwar@nd.gov)

Dr. Rich LeFever  
Department of Geology and Geological Engineering  
University of North Dakota  
Grand Forks, ND 58202-8358  
(701) 777-3014  
[richard\\_lefever@und.edu](mailto:richard_lefever@und.edu)

Chris Dirk  
North Dakota Parks and Recreation Department  
(701) 328-5357  
[cdirk@nd.gov](mailto:cdirk@nd.gov)

Ron Luethe  
GIS Specialist  
National Resources Conservation Service  
United States Department of Agriculture  
200 Rosser Avenue, Room 251  
Bismarck, ND 58501-1458  
(701) 530-2032  
[ron.luethe@nd.usda.gov](mailto:ron.luethe@nd.usda.gov)

Levi Erdmann  
North Dakota Land Department  
P.O. Box 5523  
Bismarck, ND 58506-5523  
[lerdmann@nd.gov](mailto:lerdmann@nd.gov)

Aaron Norby, P.L.S.  
Geographic Information Systems  
Kadrmass, Lee & Jackson  
3237 E. Broadway Ave  
Bismarck, ND 58501  
(701) 355-8400  
[aaron.norby@kljeng.com](mailto:aaron.norby@kljeng.com)

Todd Norton  
Survey/CADD Manager  
Advanced Engineering and Environmental Services, Inc.  
1815 Schafer Street, Suite 301  
Bismarck, ND 58501  
(701) 221-0530  
[Todd.Norton@ae2s.com](mailto:Todd.Norton@ae2s.com)

Bob Nutsch  
GIS Coordinator  
North Dakota Information Technology Department  
600 East Boulevard Avenue, Dept. 112  
Bismarck, ND 58505  
(701) 328-3212  
[bnutsch@nd.gov](mailto:bnutsch@nd.gov)

Tim Penfield  
GIS Project Manager  
Houston Engineering, Inc.  
3712 Lockport Street  
Bismarck, ND 58203  
(710) 323-0200  
[tpenfield@houstonengineeringinc.com](mailto:tpenfield@houstonengineeringinc.com)

Jeff Quast  
Research Analyst  
Economic Development & Finance Division  
North Dakota Department OF Commerce  
1600 East Century Avenue, Suite 2  
Bismarck, ND 58502  
(701) 328-5323  
[jquast@nd.gov](mailto:jquast@nd.gov)

Larry Ruebel  
North Dakota Department of Emergency Services  
P.O. Box 511  
Bismarck, ND 58506  
(701) 328-8100  
[lruebel@nd.gov](mailto:lruebel@nd.gov)

Brad Schneider  
Braun Intertec Corporation  
PO Box 9296  
Fargo, ND  
(701) 232-8701  
[bschneider@braunintertec.com](mailto:bschneider@braunintertec.com)

Rachael Seifert  
North Dakota Department of Agriculture  
600 East Boulevard Avenue, Dept. 602  
Bismarck, ND 58505-0020  
[rseifert@nd.gov](mailto:rseifert@nd.gov)

Corinne Walter  
IT Specialist  
North Dakota Field Office  
Bureau of Land Management  
2933 3<sup>rd</sup> Avenue West  
Dickinson, ND 58601  
(701) 227-7700  
[cwalter@blm.gov](mailto:cwalter@blm.gov)

Dr. John Webster  
Department of Geosciences  
Office 121 CMSC  
Minot State University  
500 University Avenue West  
Minot, ND 58707  
(701) 858-3873  
[john.webster@minotstateu.edu](mailto:john.webster@minotstateu.edu)